

# SEQUENCE LISTING

<110> Rosen, Craig A.  
Haseltine, William A.

<120> Albumin Fusion Proteins

<130> PF545

<140> Unassigned

<141> 2001-04-12

<150> 60/229,358

<151> 2000-04-12

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<151> 2000-12-21

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<170> PatentIn Ver. 2.1

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<223> synthetic oligonucleotide used to join DNA fragments

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Met Leu Leu Gln Ala Phe Leu Phe Leu Leu Ala Gly Phe Ala Ala Lys  
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Ile Ser Ala Asp Ala His Lys Ser  
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gaa aat ttc aaa gcc ttg gtg ttg att gcc ttt gct cag tat ctt cag 96  
Glu Asn Phe Lys Ala Leu Val Leu Ile Ala Phe Ala Gln Tyr Leu Gln  
20 25 30  
cag tgt cca ttt gaa gat cat gta aaa tta gtg aat gaa gta act gaa 144  
Gln Cys Pro Phe Glu Asp His Val Lys Leu Val Asn Glu Val Thr Glu  
35 40 45  
ttt gca aaa aca tgt gtt gct gat gag tca gct gaa aat tgt gac aaa 192  
Phe Ala Lys Thr Cys Val Ala Asp Glu Ser Ala Glu Asn Cys Asp Lys  
50 55 60  
tca ctt cat acc ctt ttt gga gac aaa tta tgc aca gtt gca act ctt 240  
Ser Leu His Thr Leu Phe Gly Asp Lys Leu Cys Thr Val Ala Thr Leu  
65 70 75 80  
cgt gaa acc tat ggt gaa atg gct gac tgc tgt gca aaa caa gaa cct 288  
Arg Glu Thr Tyr Gly Glu Met Ala Asp Cys Cys Ala Lys Gln Glu Pro  
85 90 95  
gag aga aat gaa tgc ttc ttg caa cac aaa gat gac aac cca aac ctc 336  
Glu Arg Asn Glu Cys Phe Leu Gln His Lys Asp Asp Asn Pro Asn Leu  
100 105 110  
ccc cga ttg gtg aga cca gag gtt gat gtg atg tgc act gct ttt cat 384  
Pro Arg Leu Val Arg Pro Glu Val Asp Val Met Cys Thr Ala Phe His

115					120					125						
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Asp	Asn	Glu	Glu	Thr	Phe	Leu	Lys	Lys	Tyr	Leu	Tyr	Glu	Ile	Ala	Arg	
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aga	cat	cct	tac	ttt	tat	gcc	ccg	gaa	ctc	ctt	ttc	ttt	gct	aaa	agg	480
Arg	His	Pro	Tyr	Phe	Tyr	Ala	Pro	Glu	Leu	Leu	Phe	Phe	Ala	Lys	Arg	
	145					150					155				160	
tat	aaa	gct	gct	ttt	aca	gaa	tgt	tgc	caa	gct	gct	gat	aaa	gct	gcc	528
Tyr	Lys	Ala	Ala	Phe	Thr	Glu	Cys	Cys	Gln	Ala	Ala	Asp	Lys	Ala	Ala	
				165					170					175		
tgc	ctg	ttg	cca	aag	ctc	gat	gaa	ctt	cgg	gat	gaa	ggg	aag	gct	tcg	576
Cys	Leu	Leu	Pro	Lys	Leu	Asp	Glu	Leu	Arg	Asp	Glu	Gly	Lys	Ala	Ser	
			180						185					190		
tct	gcc	aaa	cag	aga	ctc	aaa	tgt	gcc	agt	ctc	caa	aaa	ttt	gga	gaa	624
Ser	Ala	Lys	Gln	Arg	Leu	Lys	Cys	Ala	Ser	Leu	Gln	Lys	Phe	Gly	Glu	
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Arg	Ala	Phe	Lys	Ala	Trp	Ala	Val	Ala	Arg	Leu	Ser	Gln	Arg	Phe	Pro	
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Lys	Ala	Glu	Phe	Ala	Glu	Val	Ser	Lys	Leu	Val	Thr	Asp	Leu	Thr	Lys	
	225				230					235					240	
gtc	cac	acg	gaa	tgc	tgc	cat	gga	gat	ctg	ctt	gaa	tgt	gct	gat	gac	768
Val	His	Thr	Glu	Cys	Cys	His	Gly	Asp	Leu	Leu	Glu	Cys	Ala	Asp	Asp	
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agg	gcg	gac	ctt	gcc	aag	tat	atc	tgt	gaa	aat	cag	gat	tcg	atc	tcc	816
Arg	Ala	Asp	Leu	Ala	Lys	Tyr	Ile	Cys	Glu	Asn	Gln	Asp	Ser	Ile	Ser	
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agt	aaa	ctg	aag	gaa	tgc	tgt	gaa	aaa	cct	ctg	ttg	gaa	aaa	tcc	cac	864
Ser	Lys	Leu	Lys	Glu	Cys	Cys	Glu	Lys	Pro	Leu	Leu	Glu	Lys	Ser	His	
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Cys	Ile	Ala	Glu	Val	Glu	Asn	Asp	Glu	Met	Pro	Ala	Asp	Leu	Pro	Ser	
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Leu	Ala	Ala	Asp	Phe	Val	Glu	Ser	Lys	Asp	Val	Cys	Lys	Asn	Tyr	Ala	
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gag	gca	aag	gat	gtc	ttc	ctg	ggc	atg	ttt	ttg	tat	gaa	tat	gca	aga	1008
Glu	Ala	Lys	Asp	Val	Phe	Leu	Gly	Met	Phe	Leu	Tyr	Glu	Tyr	Ala	Arg	
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Arg	His	Pro	Asp	Tyr	Ser	Val	Val	Leu	Leu	Leu	Arg	Leu	Ala	Lys	Thr	
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Tyr	Glu	Thr	Thr	Leu	Glu	Lys	Cys	Cys	Ala	Ala	Ala	Asp	Pro	His	Glu	

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cag	aat	tta	atc	aaa	caa	aac	tgt	gag	ctt	ttt	gag	cag	ctt	gga	gag	1200
Gln	Asn	Leu	Ile	Lys	Gln	Asn	Cys	Glu	Leu	Phe	Glu	Gln	Leu	Gly	Glu	
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tac	aaa	ttc	cag	aat	gcg	cta	tta	gtt	cgt	tac	acc	aag	aaa	gta	ccc	1248
Tyr	Lys	Phe	Gln	Asn	Ala	Leu	Leu	Val	Arg	Tyr	Thr	Lys	Lys	Val	Pro	
405					410					415						
caa	gtg	tca	act	cca	act	ctt	gta	gag	gtc	tca	aga	aac	cta	gga	aaa	1296
Gln	Val	Ser	Thr	Pro	Thr	Leu	Val	Glu	Val	Ser	Arg	Asn	Leu	Gly	Lys	
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gtg	ggc	agc	aaa	tgt	tgt	aaa	cat	cct	gaa	gca	aaa	aga	atg	ccc	tgt	1344
Val	Gly	Ser	Lys	Cys	Cys	Lys	His	Pro	Glu	Ala	Lys	Arg	Met	Pro	Cys	
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Ala	Glu	Asp	Tyr	Leu	Ser	Val	Val	Leu	Asn	Gln	Leu	Cys	Val	Leu	His	
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gag	aaa	acg	cca	gta	agt	gac	aga	gtc	aca	aaa	tgc	tgc	aca	gag	tcc	1440
Glu	Lys	Thr	Pro	Val	Ser	Asp	Arg	Val	Thr	Lys	Cys	Cys	Thr	Glu	Ser	
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Leu	Val	Asn	Arg	Arg	Pro	Cys	Phe	Ser	Ala	Leu	Glu	Val	Asp	Glu	Thr	
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Tyr	Val	Pro	Lys	Glu	Phe	Asn	Ala	Glu	Thr	Phe	Thr	Phe	His	Ala	Asp	
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Ile	Cys	Thr	Leu	Ser	Glu	Lys	Glu	Arg	Gln	Ile	Lys	Lys	Gln	Thr	Ala	
515					520					525						
ctt	gtt	gag	ctt	gtg	aaa	cac	aag	ccc	aag	gca	aca	aaa	gag	caa	ctg	1632
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aaa	gct	gtt	atg	gat	gat	ttc	gca	gct	ttt	gta	gag	aag	tgc	tgc	aag	1680
Lys	Ala	Val	Met	Asp	Asp	Phe	Ala	Ala	Phe	Val	Glu	Lys	Cys	Cys	Lys	
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gct	gac	gat	aag	gag	acc	tgc	ttt	gcc	gag	gag	ggt	aaa	aaa	ctt	gtt	1728
Ala	Asp	Asp	Lys	Glu	Thr	Cys	Phe	Ala	Glu	Glu	Gly	Lys	Lys	Leu	Val	
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Pro	Arg	Leu	Val	Arg	Pro	Glu	Val	Asp	Val	Met	Cys	Thr	Ala	Phe	His		
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Cys	Ile	Ala	Glu	Val	Glu	Asn	Asp	Glu	Met	Pro	Ala	Asp	Leu	Pro	Ser		



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Glu Ala Lys Asp Val Phe Leu Gly Met Phe Leu Tyr Glu Tyr Ala Arg 325 330 335		
Arg His Pro Asp Tyr Ser Val Val Leu Leu Leu Arg Leu Ala Lys Thr 340 345 350		
Tyr Glu Thr Thr Leu Glu Lys Cys Cys Ala Ala Ala Asp Pro His Glu 355 360 365		
Cys Tyr Ala Lys Val Phe Asp Glu Phe Lys Pro Leu Val Glu Glu Pro 370 375 380		
Gln Asn Leu Ile Lys Gln Asn Cys Glu Leu Phe Glu Gln Leu Gly Glu 385 390 395 400		
Tyr Lys Phe Gln Asn Ala Leu Leu Val Arg Tyr Thr Lys Lys Val Pro 405 410 415		
Gln Val Ser Thr Pro Thr Leu Val Glu Val Ser Arg Asn Leu Gly Lys 420 425 430		
Val Gly Ser Lys Cys Cys Lys His Pro Glu Ala Lys Arg Met Pro Cys 435 440 445		
Ala Glu Asp Tyr Leu Ser Val Val Leu Asn Gln Leu Cys Val Leu His 450 455 460		
Glu Lys Thr Pro Val Ser Asp Arg Val Thr Lys Cys Cys Thr Glu Ser 465 470 475 480		
Leu Val Asn Arg Arg Pro Cys Phe Ser Ala Leu Glu Val Asp Glu Thr 485 490 495		
Tyr Val Pro Lys Glu Phe Asn Ala Glu Thr Phe Thr Phe His Ala Asp 500 505 510		
Ile Cys Thr Leu Ser Glu Lys Glu Arg Gln Ile Lys Lys Gln Thr Ala 515 520 525		
Leu Val Glu Leu Val Lys His Lys Pro Lys Ala Thr Lys Glu Gln Leu 530 535 540		
Lys Ala Val Met Asp Asp Phe Ala Ala Phe Val Glu Lys Cys Cys Lys 545 550 555 560		
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 of the Therapeutic Protein

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fusion protein in which the albumin moiety is N-terminal

of the Therapeutic Protein

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<400> 26

gcgcgcgttt aaacggccgg ccggcgcgcc ttattannnn nnnnnnnnnn n

51

<210> 27

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> forward primer useful for generation of albumin fusion protein in which the albumin moiety is c-terminal of the Therapeutic Protein

<220>

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<222> (19)

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<220>  
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<400> 27  
aggagcgtcg acaaaagann nnnnnnnnnnn nnn

33

<210> 28  
<211> 52  
<212> DNA  
<213> Artificial Sequence

<220>  
<221> primer\_bind  
<223> reverse primer useful for generation of albumin  
fusion protein in which the albumin moiety is c-terminal of  
the Therapeutic Protein

<220>  
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<220>  
<221> misc feature  
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<400> 28  
ctttaaactcg atgagcaacc tcactcttgt gtgcacnnn nnnnnnnnnn nn

52

<210> 29  
<211> 24  
<212> PRT  
<213> Artificial Sequence

<220>  
<221> signal  
<223> signal peptide of natural human serum albumin protein

<400> 29  
Met Lys Trp Val Ser Phe Ile Ser Leu Leu Phe Leu Phe Ser Ser Ala  
1 5 10 15

Tyr Ser Arg Ser Leu Asp Lys Arg  
20

<210> 30  
<211> 114  
<212> DNA  
<213> Artificial Sequence

<220>  
<221> primer\_bind  
<223> forward primer useful for generation of PC4:HSA  
albumin fusion VECTOR

<220>  
<221> misc\_feature  
<222> (5)..(10)  
<223> BamHI restriction site

<220>  
<221> misc\_feature  
<222> (11)..(16)  
<223> Hind III restriction site

<220>  
<221> misc\_feature  
<222> (17)..(27)  
<223> Kozak sequence

<220>  
<221> misc\_feature  
<222> (25)..(97)  
<223> cds natural signal sequence of human serum albumin

<220>  
<221> misc\_feature  
<222> (75)..(81)  
<223> XhoI restriction site

<220>  
<221> misc\_feature  
<222> (98)..(114)  
<223> cds first six amino acids of human serum albumin

<400> 30  
tcagggatcc aagcttcgc caccatgaag tgggtaacct ttatttcct tctttttctc 60  
tttagctcgg cttactcgag ggggtgtgtt cgtcgagatg cacacaagag tgag 114

<210> 31  
<211> 43  
<212> DNA  
<213> Artificial Sequence

<220>  
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<223> reverse primer useful for generation of  
PC4:HSA albumin fusion VECTOR

<220>  
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<222> (6)..(11)  
<223> Asp718 restriction site

<220>  
<221> misc\_feature  
<222> (12)..(17)  
<223> EcoRI restriction site

<220>  
<221> misc\_feature  
<222> (15)..(17)  
<223> reverse complement of stop codon

<220>  
<221> misc\_feature  
<222> (18)..(25)  
<223> AscI restriction site

<220>  
<221> misc\_feature  
<222> (18)..(43)  
<223> reverse complement of DNA sequence encoding last 9 amino acids

<400> 31  
gcagcgggtac cgaattcggc ggcgccttata agcctaaggc agc 43

<210> 32  
<211> 46  
<212> DNA  
<213> Artificial Sequence

<220>  
<221> primer\_bind  
<223> forward primer useful for inserting Therapeutic  
protein into pC4:HSA vector

<220>  
<221> misc feature  
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<223> n equals a,t,g, or c

<220>  
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<223> n equals a,t,g, or c

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<223> n equals a,t,g, or c

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<223> n equals a,t,g, or c

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<223> n equals a,t,g, or c

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<223> n equals a,t,g, or c

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<223> n equals a,t,g, or c

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<223> n equals a,t,g, or c

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<223> n equals a,t,g, or c

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<223> n equals a,t,g, or c

<220>  
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<223> n equals a,t,g, or c

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<223> n equals a,t,g, or c

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<223> n equals a,t,g, or c

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<223> n equals a,t,g, or c

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<220>  
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<222> (46)  
<223> n equals a,t,g, or c

<400> 32  
ccgccgctcg aggggtgtgt ttcgtcgann nnnnnnnnnn nnnnnn

46

<210> 33  
<211> 55  
<212> DNA  
<213> Artificial Sequence

<220>  
<221> primer\_bind  
<223> reverse primer useful for inserting Therapeutic  
protein into pC4:HSA vector

<220>  
<221> misc feature  
<222> (38)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature

<222> (39)  
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<222> (51)  
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<223> n equals a,t,g, or c

<220>  
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<222> (55)  
<223> n equals a,t,g, or c

<400> 33  
agtcccatcg atgagcaacc tcactcttgt gtgcatcnnn nnnnnnnnnn nnnnn 55

<210> 34  
<211> 17  
<212> PRT  
<213> Artificial Sequence

<220>  
<221> signal  
<223> Stanniocalcin signal peptide

<400> 34  
Met Leu Gln Asn Ser Ala Val Leu Leu Leu Val Ile Ser Ala Ser  
1 5 10 15

Ala

<210> 35  
<211> 22  
<212> PRT  
<213> Artificial Sequence

<220>  
<221> signal  
<223> Synthetic signal peptide

<400> 35  
Met Pro Thr Trp Ala Trp Trp Leu Phe Leu Val Leu Leu Ala Leu  
1 5 10 15

Trp Ala Pro Ala Arg Gly  
20

<210> 36  
<211> 23  
<212> DNA

<213> Artificial Sequence

<220>

<221>primer\_bind

<223>Degenerate VH forward primer useful for  
amplifying human VH domains

<400> 36

caggtgcagc tgggtgcagtc tgg

23

<210> 37

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<221>primer\_bind

<223>Degenerate VH forward primer useful for  
amplifying human VH domains

<400> 37

caggtcaact taagggagtc tgg

23

<210> 38

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<221>primer\_bind

<223>Degenerate VH forward primer useful for  
amplifying human VH domains

<400> 38

gaggtgcagc tgggtggagtc tgg

23

<210> 39

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<221>primer\_bind

<223>Degenerate VH forward primer useful for  
amplifying human VH domains

<400> 39

caggtgcagc tgcaggagtc ggg

23

<210> 40

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<221>primer\_bind

<223>Degenerate VH forward primer useful for  
amplifying human VH domains

<400> 40  
gaggtgcagc tgttgca gtc

23

<210> 41  
<211> 23  
<212> DNA  
<213> Artificial Sequence

<220>  
<221>primer\_bind  
<223>Degenerate VH forward primer useful for  
amplifying human VH domains

<400> 41  
caggtacagc tgcagcagtc agg

23

<210> 42  
<211> 24  
<212> DNA  
<213> Artificial Sequence

<220>  
<221>primer\_bind  
<223>Degenerate JH reverse primer useful for  
amplifying human VH domains

<400> 42  
tgaggagacg gtgaccaggg tgcc

24

<210> 43  
<211> 24  
<212> DNA  
<213> Artificial Sequence

<220>  
<221>primer\_bind  
<223>Degenerate JH reverse primer useful for  
amplifying human VH domains

<400> 43  
tgaagagacg gtgaccattg tccc

24

<210> 44  
<211> 24  
<212> DNA  
<213> Artificial Sequence

<220>  
<221>primer\_bind  
<223>Degenerate JH reverse primer useful for  
amplifying human VH domains

<400> 44  
tgaggagacg gtgaccaggg ttcc

24

<210> 45  
<211> 24  
<212> DNA



<213> Artificial Sequence

<220>

<221>primer\_bind

<223>Degenerate JH reverse primer useful for  
amplifying human VH domains

<400> 45

tgaggagacg gtgaccgtgg tccc

24

<210> 46

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<221>primer\_bind

<223>Degenerate Vkappa forward primer useful for  
amplifying human VL domains

<400> 46

gacatccaga tgacccagtc tcc

23

<210> 47

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<221>primer\_bind

<223>Degenerate Vkappa forward primer useful for  
amplifying human VL domains

<400> 47

gatgttgtga tgactcagtc tcc

23

<210> 48

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<221>primer\_bind

<223>Degenerate Vkappa forward primer useful for  
amplifying human VL domains

<400> 48

gatattgtga tgactcagtc tcc

23

<210> 49

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<221>primer\_bind

<223>Degenerate Vkappa forward primer useful for  
amplifying human VL domains

<400> 49

gaaattgtgt tgacgcagtc tcc

23

<210> 50

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<221>primer\_bind

<223>Degenerate Vkappa forward primer useful for  
amplifying human VL domains

<400> 50

gacatcgtga tgacccagtc tcc

23

<210> 51

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<221>primer\_bind

<223>Degenerate Vkappa forward primer useful for  
amplifying human VL domains

<400> 51

gaaacgacac tcacgcagtc tcc

23

<210> 52

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<221>primer\_bind

<223>Degenerate Vkappa forward primer useful for  
amplifying human VL domains

<400> 52

gaaattgtgc tgactcagtc tcc

23

<210> 53

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<221>primer\_bind

<223>Degenerate Vlambda forward primer useful for  
amplifying human VL domains

<400> 53

cagtctgtgt tgacgcagcc gcc

23

<210> 54

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<221>primer\_bind  
 <223>Degenerate Vlambda forward primer useful for  
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<400> 54  
 cagtctgccc tgactcagcc tgc 23

<210> 55  
 <211> 23  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <221>primer\_bind  
 <223>Degenerate Vlambda forward primer useful for  
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<400> 55  
 tcctatgtgc tgactcagcc acc 23

<210> 56  
 <211> 23  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <221>primer\_bind  
 <223>Degenerate Vlambda forward primer useful for  
 amplifying human VL domains

<400> 56  
 tcttctgagc tgactcagga ccc 23

<210> 57  
 <211> 23  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <221>primer\_bind  
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 amplifying human VL domains

<400> 57  
 cacgttatac tgactcaacc gcc 23

<210> 58  
 <211> 23  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <221>primer\_bind  
 <223>Degenerate Vlambda forward primer useful for  
 amplifying human VL domains

<400> 58  
 caggctgtgc tcaactcagcc gtc 23

<210> 59

<211> 23  
<212> DNA  
<213> Artificial Sequence

<220>  
<221>primer\_bind  
<223>Degenerate Vlambda forward primer useful for  
amplifying human VL domains

<400> 59  
aatttttatgc tgactcagcc cca

23

<210> 60  
<211> 24  
<212> DNA  
<213> Artificial Sequence

<220>  
<221>primer\_bind  
<223>Degenerate Jkappa reverse primer useful for  
amplifying human VL domains

<400> 60  
acgttttgatt tccaccttgg tccc

24

<210> 61  
<211> 24  
<212> DNA  
<213> Artificial Sequence

<220>  
<221>primer\_bind  
<223>Degenerate Jkappa reverse primer useful for  
amplifying human VL domains

<400> 61  
acgtttgatc tccagcttgg tccc

24

<210> 62  
<211> 24  
<212> DNA  
<213> Artificial Sequence

<220>  
<221>primer\_bind  
<223>Degenerate Jkappa reverse primer useful for  
amplifying human VL domains

<400> 62  
acgtttgata tccactttgg tccc

24

<210> 63  
<211> 24  
<212> DNA  
<213> Artificial Sequence

<220>  
<221>primer\_bind  
<223>Degenerate Jkappa reverse primer useful for  
amplifying human VL domains

<400> 63  
acgtttgatc tccaccttgg tccc 24

<210> 64  
<211> 24  
<212> DNA  
<213> Artificial Sequence

<220>  
<221>primer\_bind  
<223>Degenerate Jkappa reverse primer useful for  
amplifying human VL domains

<400> 64  
acgtttaatc tccagtcgtg tccc 24

<210> 65  
<211> 23  
<212> DNA  
<213> Artificial Sequence

<220>  
<221>primer\_bind  
<223>Degenerate Jlamba reverse primer useful for  
amplifying human VL domains

<400> 65  
cagtctgtgt tgacgcagcc gcc 23

<210> 66  
<211> 23  
<212> DNA  
<213> Artificial Sequence

<220>  
<221>primer\_bind  
<223>Degenerate Jlamba reverse primer useful for  
amplifying human VL domains

<400> 66  
cagtctgccc tgactcagcc tgc 23

<210> 67  
<211> 23  
<212> DNA  
<213> Artificial Sequence

<220>  
<221>primer\_bind  
<223>Degenerate Jlamba reverse primer useful for  
amplifying human VL domains

<400> 67  
tcctatgtgc tgactcagcc acc 23

<210> 68  
<211> 23  
<212> DNA  
<213> Artificial Sequence

<220>  
<221>primer\_bind  
<223>Degenerate Jlambda reverse primer useful for  
amplifying human VL domains

<400> 68  
tcttctgagc tgactcagga ccc

23

<210> 69  
<211> 23  
<212> DNA  
<213> Artificial Sequence

<220>  
<221>primer\_bind  
<223>Degenerate Jlambda reverse primer useful for  
amplifying human VL domains

<400> 69  
cacgttatac tgactcaacc gcc

23

<210> 70  
<211> 23  
<212> DNA  
<213> Artificial Sequence

<220>  
<221>primer\_bind  
<223>Degenerate Jlambda reverse primer useful for  
amplifying human VL domains

<400> 70  
caggctgtgc tcactcagcc gtc

23

<210> 71  
<211> 23  
<212> DNA  
<213> Artificial Sequence

<220>  
<221>primer\_bind  
<223>Degenerate Jlambda reverse primer useful for  
amplifying human VL domains

<400> 71  
aattttatgc tgactcagcc cca

23

<210> 72  
<211> 15  
<212> PRT  
<213> Artificial Sequence

<220>  
<221>turn  
<223>Linker peptide that may be used to join VH  
and VL domains in an scFv.

<400> 72  
Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser

1 5 10 15

<210> 73  
 <211> 23  
 <212> PRT  
 <213> Homo sapiens

<400> 73  
 Cys Cys Cys Ala Ala Gly Ala Ala Thr Thr Cys Cys Cys Thr Thr Ala  
 1 5 10 15

Thr Cys Cys Ala Gly Gly Cys  
 20

<210> 74  
 <211> 429  
 <212> PRT  
 <213> Homo sapiens

<400> 74  
 Met Cys Pro Gly Ala Leu Trp Val Ala Leu Pro Leu Leu Ser Leu Leu  
 1 5 10 15

Ala Gly Ser Leu Gln Gly Lys Pro Leu Gln Ser Trp Gly Arg Gly Ser  
 20 25 30

Ala Gly Gly Asn Ala His Ser Pro Leu Gly Val Pro Gly Gly Gly Leu  
 35 40 45

Pro Glu His Thr Phe Asn Leu Lys Met Phe Leu Glu Asn Val Lys Val  
 50 55 60

Asp Phe Leu Arg Ser Leu Asn Leu Ser Gly Val Pro Ser Gln Asp Lys  
 65 70 75 80

Thr Arg Val Glu Pro Pro Gln Tyr Met Ile Asp Leu Tyr Asn Arg Tyr  
 85 90 95

Thr Ser Asp Lys Ser Thr Thr Pro Ala Ser Asn Ile Val Arg Ser Phe  
 100 105 110

Ser Met Glu Asp Ala Ile Ser Ile Thr Ala Thr Glu Asp Phe Pro Phe  
 115 120 125

Gln Lys His Ile Leu Leu Phe Asn Ile Ser Ile Pro Arg His Glu Gln  
 130 135 140

Ile Thr Arg Ala Glu Leu Arg Leu Tyr Val Ser Cys Gln Asn His Val  
 145 150 155 160

Asp Pro Ser His Asp Leu Lys Gly Ser Val Val Ile Tyr Asp Val Leu  
 165 170 175

Asp Gly Thr Asp Ala Trp Asp Ser Ala Thr Glu Thr Lys Thr Phe Leu  
 180 185 190

Val Ser Gln Asp Ile Gln Asp Glu Gly Trp Glu Thr Leu Glu Val Ser  
 195 200 205

Ser Ala Val Lys Arg Trp Val Arg Ser Asp Ser Thr Lys Ser Lys Asn

210

215

220

Lys Leu Glu Val Thr Val Glu Ser His Arg Lys Gly Cys Asp Thr Leu  
 225 230 235 240  
 Asp Ile Ser Val Pro Pro Gly Ser Arg Asn Leu Pro Phe Phe Val Val  
 245 250 255  
 Phe Ser Asn Asp His Ser Ser Gly Thr Lys Glu Thr Arg Leu Glu Leu  
 260 265 270  
 Arg Glu Met Ile Ser His Glu Gln Glu Ser Val Leu Lys Lys Leu Ser  
 275 280 285  
 Lys Asp Gly Ser Thr Glu Ala Gly Glu Ser Ser His Glu Glu Asp Thr  
 290 295 300  
 Asp Gly His Val Ala Ala Gly Ser Thr Leu Ala Arg Arg Lys Arg Ser  
 305 310 315 320  
 Ala Gly Ala Gly Ser His Cys Gln Lys Thr Ser Leu Arg Val Asn Phe  
 325 330 335  
 Glu Asp Ile Gly Trp Asp Ser Trp Ile Ile Ala Pro Lys Glu Tyr Glu  
 340 345 350  
 Ala Tyr Glu Cys Lys Gly Gly Cys Phe Phe Pro Leu Ala Asp Asp Val  
 355 360 365  
 Thr Pro Thr Lys His Ala Ile Val Gln Thr Leu Val His Leu Lys Phe  
 370 375 380  
 Pro Thr Lys Val Gly Lys Ala Cys Cys Val Pro Thr Lys Leu Ser Pro  
 385 390 395 400  
 Ile Ser Val Leu Tyr Lys Asp Asp Met Gly Val Pro Thr Leu Lys Tyr  
 405 410 415  
 His Tyr Glu Gly Met Ser Val Ala Glu Cys Gly Cys Arg  
 420 425

&lt;210&gt; 75

&lt;211&gt; 280

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 75

Met Ala Pro Ser Gly Ser Leu Ala Val Pro Leu Ala Val Leu Val Leu  
 1 5 10 15

Leu Leu Trp Gly Ala Pro Trp Thr His Gly Arg Arg Ser Asn Val Arg  
 20 25 30

Val Ile Thr Asp Glu Asn Trp Arg Glu Leu Leu Glu Gly Asp Trp Met  
 35 40 45

Ile Glu Phe Tyr Ala Pro Trp Cys Pro Ala Cys Gln Asn Leu Gln Pro  
 50 55 60

Glu Trp Glu Ser Phe Ala Glu Trp Gly Glu Asp Leu Glu Val Asn Ile



65	70	75	80
Ala Lys Val Asp Val Thr Glu Gln Pro Gly Leu Ser Gly Arg Phe Ile			
	85	90	95
Ile Thr Ala Leu Pro Thr Ile Tyr His Cys Lys Asp Gly Glu Phe Arg			
	100	105	110
Arg Tyr Gln Gly Pro Arg Thr Lys Lys Asp Phe Ile Asn Phe Ile Ser			
	115	120	125
Asp Lys Glu Trp Lys Ser Ile Glu Pro Val Ser Ser Trp Phe Gly Pro			
	130	135	140
Gly Ser Val Leu Met Ser Ser Met Ser Ala Leu Phe Gln Leu Ser Met			
	145	150	155
Trp Ile Arg Thr Cys His Asn Tyr Phe Ile Glu Asp Leu Gly Leu Pro			
	165	170	175
Val Trp Gly Ser Tyr Thr Val Phe Ala Leu Ala Thr Leu Phe Ser Gly			
	180	185	190
Leu Leu Leu Gly Leu Cys Met Ile Phe Val Ala Asp Cys Leu Cys Pro			
	195	200	205
Ser Lys Arg Arg Arg Pro Gln Pro Tyr Pro Tyr Pro Ser Lys Lys Leu			
	210	215	220
Leu Ser Glu Ser Ala Gln Pro Leu Lys Lys Val Glu Glu Glu Gln Glu			
	225	230	235
Ala Asp Glu Glu Asp Val Ser Glu Glu Glu Ala Glu Ser Lys Glu Gly			
	245	250	255
Thr Asn Lys Asp Phe Pro Gln Asn Ala Ile Arg Gln Arg Ser Leu Gly			
	260	265	270
Pro Ser Leu Ala Thr Asp Lys Ser			
	275	280	

<210> 76  
 <211> 112  
 <212> PRT  
 <213> Homo sapiens

<400> 76  
 Met Phe Trp Val Met Glu Thr Ala Lys Pro Pro Val Ser Glu Asp Ser  
 1 5 10 15  
 Phe Arg Leu Pro Arg Lys Trp Gly Trp Arg Thr Glu Ala Thr Ala Pro  
 20 25 30  
 His Ala Pro Val Pro Gln Ser Ile Cys Pro Arg Tyr Thr Ser Pro Cys  
 35 40 45  
 Ala Pro His Asp Cys Gly Ser Gln Thr Val Gln Gly Asn Ser Leu Ser  
 50 55 60  
 Leu Phe Tyr Thr Leu Ser His Lys Ala Pro Gln Leu Pro His Arg Val

65		70		75		80									
Pro	Ala	Pro	Leu	Phe	Cys	Lys	Tyr	Val	Lys	Arg	Lys	Lys	Cys	Lys	Arg
				85					90					95	
Trp	Ser	Leu	Gly	Trp	Ser	Ser	Ser	Leu	Gln	Leu	Arg	Leu	Leu	Thr	Met
			100					105					110		

<210> 77  
 <211> 346  
 <212> PRT  
 <213> Homo sapiens

<400> 77
Met Asp Pro Ala Arg Lys Ala Gly Ala Gln Ala Met Ile Trp Thr Ala
1 5 10 15
Gly Trp Leu Leu Leu Leu Leu Leu Arg Gly Gly Ala Gln Ala Leu Glu
20 25 30
Cys Tyr Ser Cys Val Gln Lys Ala Asp Asp Gly Cys Ser Pro Asn Lys
35 40 45
Met Lys Thr Val Lys Cys Ala Pro Gly Val Asp Val Cys Thr Glu Ala
50 55 60
Val Gly Ala Val Glu Thr Ile His Gly Gln Phe Ser Leu Ala Val Arg
65 70 75 80
Gly Cys Gly Ser Gly Leu Pro Gly Lys Asn Asp Arg Gly Leu Asp Leu
85 90 95
His Gly Leu Leu Ala Phe Ile Gln Leu Gln Gln Cys Ala Gln Asp Arg
100 105 110
Cys Asn Ala Lys Leu Asn Leu Thr Ser Arg Ala Leu Asp Pro Ala Gly
115 120 125
Asn Glu Ser Ala Tyr Pro Pro Asn Gly Val Glu Cys Tyr Ser Cys Val
130 135 140
Gly Leu Ser Arg Glu Ala Cys Gln Gly Thr Ser Pro Pro Val Val Ser
145 150 155 160
Cys Tyr Asn Ala Ser Asp His Val Tyr Lys Gly Cys Phe Asp Gly Asn
165 170 175
Val Thr Leu Thr Ala Ala Asn Val Thr Val Ser Leu Pro Val Arg Gly
180 185 190
Cys Val Gln Asp Glu Phe Cys Thr Arg Asp Gly Val Thr Gly Pro Gly
195 200 205
Phe Thr Leu Ser Gly Ser Cys Cys Gln Gly Ser Arg Cys Asn Ser Asp
210 215 220
Leu Arg Asn Lys Thr Tyr Phe Ser Pro Arg Ile Pro Pro Leu Val Arg
225 230 235 240
Leu Pro Pro Pro Glu Pro Thr Thr Val Ala Ser Thr Thr Ser Val Thr

				245						250					255
Thr	Ser	Thr	Ser	Ala	Pro	Val	Arg	Pro	Thr	Ser	Thr	Thr	Lys	Pro	Met
			260					265					270		
Pro	Ala	Pro	Thr	Ser	Gln	Thr	Pro	Arg	Gln	Gly	Val	Glu	His	Glu	Ala
		275					280					285			
Ser	Arg	Asp	Glu	Glu	Pro	Arg	Leu	Thr	Gly	Gly	Ala	Ala	Gly	His	Gln
	290					295					300				
Asp	Arg	Ser	Asn	Ser	Gly	Gln	Tyr	Pro	Ala	Lys	Gly	Gly	Pro	Gln	Gln
305					310					315				320	
Pro	His	Asn	Lys	Gly	Cys	Val	Ala	Pro	Thr	Ala	Gly	Leu	Ala	Ala	Leu
				325					330					335	
Leu	Leu	Ala	Val	Ala	Ala	Gly	Val	Leu	Leu						
			340					345							

<210> 78  
 <211> 272  
 <212> PRT  
 <213> Homo sapiens

<400> 78

Met	Lys	Gly	Lys	Lys	Gly	Ile	Val	Ala	Ala	Ser	Gly	Ser	Glu	Thr	Glu
1				5					10					15	
Asp	Glu	Asp	Ser	Met	Asp	Ile	Pro	Leu	Asp	Leu	Ser	Ser	Ser	Ala	Gly
			20					25					30		
Ser	Gly	Lys	Arg	Arg	Arg	Arg	Gly	Asn	Leu	Pro	Lys	Glu	Ser	Val	Gln
		35					40					45			
Ile	Leu	Arg	Asp	Trp	Leu	Tyr	Glu	His	Arg	Tyr	Asn	Ala	Tyr	Pro	Ser
	50					55					60				
Glu	Gln	Glu	Lys	Ala	Leu	Leu	Ser	Gln	Gln	Thr	His	Leu	Ser	Thr	Leu
65					70					75					80
Gln	Val	Cys	Asn	Trp	Phe	Ile	Asn	Ala	Arg	Arg	Arg	Leu	Leu	Pro	Asp
				85					90					95	
Met	Leu	Arg	Lys	Asp	Gly	Lys	Asp	Pro	Asn	Gln	Phe	Thr	Ile	Ser	Arg
			100					105					110		
Arg	Gly	Ala	Lys	Ile	Ser	Glu	Thr	Ser	Ser	Val	Glu	Ser	Val	Met	Gly
		115					120					125			
Ile	Lys	Asn	Phe	Met	Pro	Ala	Leu	Glu	Glu	Thr	Pro	Phe	His	Ser	Cys
	130					135					140				
Thr	Ala	Gly	Pro	Asn	Pro	Thr	Leu	Gly	Arg	Pro	Leu	Ser	Pro	Lys	Pro
145					150					155					160
Ser	Ser	Pro	Gly	Ser	Val	Leu	Ala	Arg	Pro	Ser	Val	Ile	Cys	His	Thr
				165					170					175	
Thr	Val	Thr	Ala	Leu	Lys	Asp	Val	Pro	Phe	Ser	Leu	Cys	Gln	Ser	Val

